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GENERAL ELECTRIC COMPANY
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EXAMINER	
MCALEENAN, JAMES M	
ART UNIT	PAPER NUMBER
3745	7

DATE MAILED: 05/20/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/682,899	JACKSON ET AL.	
	Examiner	Art Unit	
	James M McAleenan	3745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☐ Claim(s) *1-140* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12,28,34-48,64-78,102-117 and 133-140* is/are rejected.

7)☒ Claim(s) *13-27,29,49-63,79-101 and 118-132* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *31 October 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *4* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Objections

1. Claims 73 and 104 are objected to because of the following informalities: Claims 73 and 104 merely unduly multiply the same invention, wherein Applicant has not presented independent claims differing substantially from each other. Examiner recommends Applicant consult a Patent Attorney, or review the MPEP when "attempting" to write claims to ensure Applicant's claimed invention is afforded the proper Statutory protection granted by the USPTO. Claim 34 is simply repeating the limitations of claim 1 and does not further limit the claimed invention. Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-12, 28, 34-48, 64-78, 102-117, 133-140 are rejected under 35 U.S.C. 102(b) as being anticipated by either Arnold (U.S. Patent Number 6,049,978), or Ferrigno et al. (U.S. Patent Number 5,846,057), or James et al. (U.S. Patent Number 6,491,208). The above

presented prior art discloses the method of repair of a gas turbine blade having a blade, wherein the blade ((18) see Figure 1A and Col. 23, lines 7-9 of Arnold) ((8) see Figure 1 and Col. 6, lines 8 of Ferrigno et al.) ((66) see Figure 5 and Col. 6, lines 28-30 of James et al.) has a tip and body (see Figure 1A and Col. 14, lines 6-59 of Arnold) (see Figure 1 and Col. 6, lines 8-67 of Ferrigno et al.) (see Figures 2, 4-5 and Col. 2, lines 35-67 of James et al.). The above presented prior art teaches at least one tip insert disposed on the blade body, wherein the tip insert replaces a removed portion of the blade tip (see Figure 1A and Col. 14, lines 6-59 of Arnold) (see Figure 1 and Col. 6, lines 8-67 of Ferrigno et al.) (see Figures 2, 4-5 and Col. 2, lines 35-67 of James et al.). Regarding claim 2, the above presented prior art teaches the blade tip including a squealer, wherein a portion of the tip has a squealer (see Figure 1A and Col. 14, lines 6-32 of Arnold) (see Figure 1 and Col. 6, lines 8-47 of Ferrigno et al.) (see Figures 2, 4-5 and Col. 2, lines 30-68 of James et al.). Regarding claim 3, the above presented prior art teaches joining at least one tip insert to the blade by means of a process of either welding, brazing and diffusion bonding (see Figure 1A and Col. 14, lines 6-59 of Arnold) (see Figure 1 and Col. 6, lines 8-67 of Ferrigno et al.) (see Figures 2, 4-5 and Col. 2, lines 35-67 of James et al.). Regarding claim 4, the above presented prior art discloses the tip insert including at least one internal cooling channel (see Figure 1A and Col. 14, lines 6-59 of Arnold) (see Figure 1 and Col. 6, lines 8-67 of Ferrigno et al.) (see Figures 2, 4-5 and Col. 2, lines 35-67 of James et al.). Regarding claim 5, the above presented prior art discloses the tip insert including a plurality of cooling holes (see Figure 1A and Col. 14, lines 6-59 of Arnold) (see Figure 1 and Col. 6, lines 8-67 of Ferrigno et al.) (see Figures

2, 4-5 and Col. 2, lines 35-67 of James et al.). Regarding claim 6, the above presented prior art the tip insert including a superalloy based on a metal selected from the group consisting of iron, cobalt and nickel (see Figure 1A and Col. 14, lines 6-59 of Arnold) (see Figure 1 and Col. 6, lines 8-67 of Ferrigno et al.) (see Figure 2and Col. 2, lines 35-67 of James et al.). Regarding claim 7, the above presented prior art discloses the tip insert including a directionally solidified material (see Figure 1A and Col. 14, lines 6-59 of Arnold) (see Figures 1, 4 and Col. 6, lines 8-67 of Ferrigno et al.) (see Figures 2, 4-5 and Col. 2, lines 35-67 of James et al.). Regarding claim 8, the above presented prior art teaches the tip insert including a single crystal material (see Col. 6, lines 5-45 of Arnold) (see Col. 2, lines 1-40 of Ferrigno et al.) (see abstract of James et al.). Regarding claim 9, the above presented prior art discloses a first material and tip insert comprising a second material, wherein the first and second material have the same creep life, fatigue life, and oxidation resistance (see Figure 1A and Col. 14, lines 6-49 of Arnold) (see Figure 1 and Col. 6, lines 8-62 of Ferrigno et al.) (see Figures 2, 4-5 and Col. 2, lines 35-66 of James et al.). Regarding claim 10, the above presented prior art teaches the blade having a first material and the tip insert having a second material (see Figure 1A and Col. 14, lines 5-59 of Arnold) (see Figures 2, 4-5 and Col. 5, lines 1-25 and Col. 6, lines 40-65 of Ferrigno et al.) (see Figures 2, 4-5 and Col. 4, lines 33-65 of James et al.). The above presented prior art discloses the second material having at least one material property exceeding the first material, wherein at least one material property consists of oxidation resistance, creep life and fatigue life (see Figure 1A and Col. 14, lines 5-59 of Arnold) (see Figures 2, 4-5 and Col. 5, lines 1-25 and Col. 6, lines 40-65 of Ferrigno et al.) (see Figures 2,

4-5 and Col. 4, lines 33-65 of James et al.). Regarding claim 11, the above presented prior art discloses the second material including a platinum group of metal modified nickel-based superalloy. Regarding claim 12, the above presented prior art teaches the superalloy including a metal selected from the group consisting of Pt, Pd, Rh, Ir, and Ru. (see Figure 1A and Col. 14, lines 5-59 of Arnold) (see Figures 2, 4-5 and Col. 5, lines 1-25 and Col. 6, lines 40-65 of Ferrigno et al.) (see Figures 2, 4-5 and Col. 4, lines 33-65 of James et al.). Regarding claim 28, the above presented prior art teaches second material has a directionally solidified eutectic material. Regarding claim 30, the above presented prior art teaches the second material having a fatigue life three time greater than the fatigue life of the first material (see Col. 1, lines 38-67 and Col. 2, lines 1-38 of Arnold) (see Col. 3, lines 5-34 of Ferrigno et al.) (see Col. 1, lines 10-38 of James et al.). Regarding claim 31, the above presented prior art teaches the second material the second material includes an oxide dispersion strengthened material (see Col. 6, lines 64-67 and Col. 7, lines 1-65 of Arnold) (see Col. 5, lines 29-46 of Ferrigno et al.) (see Col. 6, lines 42-67 and Col. 7, lines 1-15 of James et al.). Regarding claim 32, the above presented prior art teaches the oxide dispersion strengthened material includes Ni, Cr and yttrium oxide (see Col. 14, lines 50-67 of Arnold) (see Col. 7, lines 14-55 of Ferrigno et al.) (see Col. 1, lines 10-50 of James et al.). Regarding claim 33, the above presented prior art teaches the second material creep life three times greater than the first material (see Col. 1, lines 38-67 and Col. 2, lines 1-38 of Arnold) (see Col. 3, lines 5-34 of Ferrigno et al.) (see Col. 1, lines 10-38 of James et al.). Regarding claim 34, the above presented prior art discloses the method of repair of a gas turbine blade having a blade,

wherein the blade ((18) see Figure 1A and Col. 23, lines 7-9 of Arnold) ((8) see Figure 1 and Col. 6, lines 8 of Ferrigno et al.) ((66) see Figure 5 and Col. 6, lines 28-30 of James et al.) has a tip and body (see Figure 1A and Col. 14, lines 6-59 of Arnold) (see Figure 1 and Col. 6, lines 8-67 of Ferrigno et al.) (see Figures 2, 4-5 and Col. 2, lines 35-67 of James et al.). The above presented prior art teaches at least one tip insert disposed on the blade body, wherein the tip insert replaces a removed portion of the blade tip (see Figure 1A and Col. 14, lines 6-59 of Arnold) (see Figure 1 and Col. 6, lines 8-67 of Ferrigno et al.) (see Figures 2, 4-5 and Col. 2, lines 35-67 of James et al.).

Regarding claim 35, the above presented prior art teaches method of manufacture of a gas turbine blade ((18) see Figure 1A and Col. 23, lines 7-9 of Arnold) ((8) see Figure 1 and Col. 6, lines 8 of Ferrigno et al.) ((66) see Figure 5 and Col. 6, lines 28-30 of James et al.) wherein the blade includes a tip and body (see Figure 1A and Col. 14, lines 6-59 of Arnold) (see Figure 1 and Col. 6, lines 8-67 of Ferrigno et al.) (see Figures 2, 4-5 and Col. 2, lines 35-67 of James et al.). The above presented prior art discloses removing a portion of the blade tip and providing a tip insert (see Figure 1A and Col. 14, lines 6-59 of Arnold) (see Figure 1 and Col. 6, lines 8-67 of Ferrigno et al.) (see Figures 2, 4-5 and Col. 2, lines 35-67 of James et al.), wherein the tip insert material includes a single nickel-based. The above presented prior art discloses the second material including NiTaC directionally solidified eutectic alloy and an oxide dispersion strengthened alloy.

Regarding claim 36, the above presented prior art teaches method of manufacture of a gas turbine blade ((18) see Figure 1A and Col. 23, lines 7-9 of Arnold) ((8) see Figure 1 and Col. 6, lines 8 of Ferrigno et al.) ((66) see Figure 5 and Col. 6, lines 28-30 of James et al.) wherein the blade includes a tip and body (see Figure 1A and Col. 14, lines 6-59 of Arnold) (see Figure 1 and Col. 6, lines 8-67 of Ferrigno et al.) (see Figures 2, 4-5 and Col. 2, lines 35-67 of James et al.). The above presented prior art discloses removing a portion of the blade tip and providing a tip insert (see Figure 1A and Col. 14, lines 6-59 of Arnold) (see Figure 1 and Col. 6, lines 8-67 of Ferrigno et al.) (see Figures 2, 4-5 and Col. 2, lines 35-67 of James et al.) includes a material selected from the group consisting of rhodium, platinum, palladium and mixtures thereof. The above presented prior art discloses the tip insert is placed on the blade body, wherein the tip insert replaces a one removed portion of the blade body.

Regarding claim 37, the above presented prior art teaches the method of manufacture of a gas turbine blade having a blade ((18) see Figure 1A and Col. 23, lines 7-9 of Arnold) ((8) see Figure 1 and Col. 6, lines 8 of Ferrigno et al.) ((66) see Figure 5 and Col. 6, lines 28-30 of James et al.) , wherein the blade has a tip and body (see Figure 1A and Col. 14, lines 6-59 of Arnold) (see Figure 1 and Col. 6, lines 8-67 of Ferrigno et al.) (see Figures 2, 4-5 and Col. 2, lines 35-67 of James et al.). The above presented prior art teaches at least one tip insert (see Figure 1A and Col. 14, lines 6-59 of Arnold) (see Figure 1 and Col. 6, lines 8-67 of Ferrigno et al.) (see Figures 2, 4-5 and Col. 2, lines 35-67 of James et al.) disposed on the blade body, wherein the tip insert replaces a removed portion of the blade tip. Regarding claim 38, the above presented prior art

teaches the method of the tip insert including a squealer tip (see Figure 1A and Col. 14, lines 6-59 of Arnold) (see Figure 1 and Col. 6, lines 8-67 of Ferrigno et al.) (see Figures 2, 4-5 and Col. 2, lines 35-67 of James et al.). Regarding claim 39, the above presented prior art teaches joining at least one tip insert to the blade by means of a process of either welding, brazing and diffusion bonding (see Figure 1A and Col. 14, lines 6-59 of Arnold) (see Figure 1 and Col. 6, lines 8-67 of Ferrigno et al.) (see Figures 2, 4-5 and Col. 2, lines 35-67 of James et al.). Regarding claim 40, the above presented prior art discloses the tip insert including at least one internal cooling channel (see Figure 1A and Col. 14, lines 6-59 of Arnold) (see Figure 1 and Col. 6, lines 8-67 of Ferrigno et al.) (see Figures 2, 4-5 and Col. 2, lines 35-67 of James et al.). Regarding claim 41, the above presented prior art discloses the tip insert having a plurality of cooling holes (see Figure 1A and Col. 14, lines 6-59 of Arnold) (see Figure 1 and Col. 6, lines 8-67 of Ferrigno et al.) (see Figures 2, 4-5 and Col. 2, lines 35-67 of James et al.). Regarding claim 42, the above presented prior art the tip insert including a superalloy based on a metal selected from the group consisting of iron, cobalt and nickel (see Figure 1A and Col. 14, lines 6-59 of Arnold) (see Figure 1 and Col. 6, lines 8-67 of Ferrigno et al.) (see Figure 2and Col. 2, lines 35-67 of James et al.). Regarding claim 43, the above presented prior art discloses the tip insert including a directionally solidified material (see Figure 1A and Col. 14, lines 6-59 of Arnold) (see Figures 1, 4 and Col. 6, lines 8-67 of Ferrigno et al.) (see Figures 2, 4-5 and Col. 2, lines 35-67 of James et al.). Regarding claim 44, the above presented prior art teaches the tip insert including a single crystal material (see Figure 1A and Col. 14, lines 6-49 of Arnold) (see Figure 1 and Col. 6, lines 8-62 of Ferrigno et al.) (see

Figures 2, 4-5 and Col. 2, lines 35-66 of James et al.). Regarding claim 45, the above presented prior art discloses a first material and tip insert comprising a second material, wherein the first and second material have the same creep life, fatigue life, and oxidation resistance (see Figure 1A and Col. 14, lines 6-49 of Arnold) (see Figure 1 and Col. 6, lines 8-62 of Ferrigno et al.) (see Figures 2, 4-5 and Col. 2, lines 35-66 of James et al.). Regarding claim 46, the above presented prior art teaches the blade having a first material and the tip insert having a second material. The above presented prior art discloses the second material having at least one material property exceeding the first material, wherein at least one material property consists of oxidation resistance, creep life and fatigue life. Regarding claim 47, the above presented prior art discloses the second material including a platinum group of metal modified nickel-based (see Figure 1A and Col. 14, lines 6-59 of Arnold) (see Figure 1 and Col. 6, lines 8-67 of Ferrigno et al.) (see Figure 2and Col. 2, lines 35-67 of James et al.). Regarding claim 48, the above presented prior art discloses the superalloy including a metal selected from the group consisting of Pt, Pd, Rh, Ir, and Ru. Regarding claim 64, the above presented prior art teaches second material has a directionally solidified eutectic material. Regarding claim 65, the above presented prior art teaches the directionally solidified eutectic material being Ni, Ta, and C (see Figure 1A and Col. 14, lines 6-59 of Arnold) (see Figures 1, 4 and Col. 6, lines 8-67 of Ferrigno et al.) (see Figures 2, 4-5 and Col. 2, lines 35-67 of James et al.). Regarding claim 66, the above presented prior art teaches the second material having a fatigue life three time greater than the fatigue life of the first material. Regarding claim 67, the above presented prior art teaches the second material the second material includes an

oxide dispersion strengthened material (see Figure 1A and Col. 14, lines 6-49 of Arnold) (see Figure 1 and Col. 6, lines 8-62 of Ferrigno et al.) (see Figures 2, 4-5 and Col. 2, lines 35-66 of James et al.). Regarding claim 68, the above presented prior art teaches the oxide dispersion strengthened material includes Ni, Cr and yttrium oxide. Regarding claim 69, the above presented prior art teaches the second material creep life three times greater than the first material (see Col. 1, lines 38-67 and Col. 2, lines 1-38 of Arnold) (see Col. 3, lines 5-34 of Ferrigno et al.) (see Col. 1, lines 10-38 of James et al.). Regarding claim 70, the above presented prior art teaches the method of manufacture of a gas turbine blade having a blade, wherein the blade has a tip and body (see Col. 14, lines 50-67 of Arnold) (see Col. 7, lines 14-55 of Ferrigno et al.) (see Col. 1, lines 10-50 of James et al.). The above presented prior art teaches at least one tip insert disposed on the blade body, wherein the tip insert replaces a removed portion of the blade tip.

Regarding claim 71, the above presented prior art teaches the method of manufacturing a blade ((18) see Figure 1A and Col. 23, lines 7-9 of Arnold) ((8) see Figure 1 and Col. 6, lines 8 of Ferrigno et al.) ((66) see Figure 5 and Col. 6, lines 28-30 of James et al.) having a body (see Figure 1A and Col. 14, lines 6-59 of Arnold) (see Figure 1 and Col. 6, lines 8-67 of Ferrigno et al.) (see Figures 2, 4-5 and Col. 2, lines 35-67 of James et al.) and a tip insert. The above presented prior art teaches the tip insert comprising of material from a crystal nickel-based superalloy, NiTaC directionally solidified eutectic alloy, and an oxide dispersion strengthened alloy (see Figure 1A and Col. 14, lines 6-59 of Arnold) (see Figures 1, 4 and Col. 6, lines 8-67 of Ferrigno et al.) (see Figures 2, 4-5 and Col. 2, lines 35-67 of James et al.). The above presented

prior art teaches the tip insert on the body (see Col. 14, lines 50-67 of Arnold) (see Col. 7, lines 14-55 of Ferrigno et al.) (see Col. 1, lines 10-50 of James et al.), wherein the tip (see Figure 1A and Col. 14, lines 6-59 of Arnold) (see Figure 1 and Col. 6, lines 8-67 of Ferrigno et al.) (see Figures 2, 4-5 and Col. 2, lines 35-67 of James et al.) has a tip insert.

Regarding claim 72, the above presented prior art teaches a second material including rhodium, platinum, palladium and mixtures thereof. The above presented prior art teaches the repair and manufacture of a gas turbine blade body (see Col. 14, lines 50-67 of Arnold) (see Col. 7, lines 14-55 of Ferrigno et al.) (see Col. 1, lines 10-50 of James et al.) and tip, wherein a portion of the blade tip (see Figure 1A and Col. 14, lines 6-59 of Arnold) (see Figure 1 and Col. 6, lines 8-67 of Ferrigno et al.) (see Figures 2, 4-5 and Col. 2, lines 35-67 of James et al.) is removed. The above presented prior art teaches a tip insert being made of a second material that is disposed on the blade body (see Col. 14, lines 50-67 of Arnold) (see Col. 7, lines 14-55 of Ferrigno et al.) (see Col. 1, lines 10-50 of James et al.), wherein the insert replaces the removed portion of the blade.

Regarding claim 73, the above presented prior art teaches a tip insert manufacture and repair of a tip for a gas turbine blade ((18) see Figure 1A and Col. 23, lines 7-9 of Arnold) ((8) see Figure 1 and Col. 6, lines 8 of Ferrigno et al.) ((66) see Figure 5 and Col. 6, lines 28-30 of James et al.), wherein the tip (see Figure 1A and Col. 14, lines 6-59 of Arnold) (see Figure 1 and Col. 6, lines 8-67 of Ferrigno et al.) (see Figures 2, 4-5 and Col. 2, lines 35-67 of James et al.) includes an external surface shaped as a the external surface of a blade. Regarding claim 74, the

above presented prior art teaches the tip insert including an internal cooling channel. Regarding claim 75, the above presented prior art teaches the tip insert having a plurality of cooling holes. Regarding claim 76, the above presented prior art teaches the tip insert including a superalloy based on a metal selected from Iron, Cobalt and nickel. Regarding claim 77, the above presented prior art teaches the superalloy including directionally solidified material. Regarding claim 78, the above presented prior art teaches the superalloy including a single crystal material.

Regarding claim 102, the above presented prior art teaches a tip insert for manufacture and repair of a tip of a gas turbine blade ((18) see Figure 1A and Col. 23, lines 7-9 of Arnold) ((8) see Figure 1 and Col. 6, lines 8 of Ferrigno et al.) ((66) see Figure 5 and Col. 6, lines 28-30 of James et al.), wherein the insert includes an external surface substantially conforming for an external surface of the blade ((18) see Figure 1A and Col. 23, lines 7-9 of Arnold) ((8) see Figure 1 and Col. 6, lines 8 of Ferrigno et al.) ((66) see Figure 5 and Col. 6, lines 28-30 of James et al.). The above presented prior art teaches the tip insert being including a material of a single crystal nickel-based superalloy, a NiTaC directionally solidified eutectic alloy, and an oxide dispersion strengthened alloy.

Regarding claim 103, the above presented prior art teaches a tip insert for manufacture and repair of a tip (see Figure 1A and Col. 14, lines 6-59 of Arnold) (see Figure 1 and Col. 6, lines 8-67 of Ferrigno et al.) (see Figures 2, 4-5 and Col. 2, lines 35-67 of James et al.) of a gas turbine blade ((18) see Figure 1A and Col. 23, lines 7-9 of Arnold) ((8) see Figure 1 and Col. 6, lines 8 of Ferrigno et al.) ((66) see Figure 5 and Col. 6, lines 28-30 of James et al.), wherein the

insert includes an external surface substantially conforming for an external surface of the blade. The above presented prior art teaches the tip insert including rhodium, platinum, palladium and mixtures thereof.

Regarding claim 104, the above presented prior art teaches a gas turbine blade ((18) see Figure 1A and Col. 23, lines 7-9 of Arnold) ((8) see Figure 1 and Col. 6, lines 8 of Ferrigno et al.) ((66) see Figure 5 and Col. 6, lines 28-30 of James et al.) comprising of a turbine blade body (see Figure 1A and Col. 14, lines 6-59 of Arnold) (see Figure 1 and Col. 6, lines 8-67 of Ferrigno et al.) (see Figures 2, 4-5 and Col. 2, lines 35-67 of James et al.) and tip, wherein said blade tip (see Figure 1A and Col. 14, lines 6-59 of Arnold) (see Figure 1 and Col. 6, lines 8-67 of Ferrigno et al.) (see Figures 2, 4-5 and Col. 2, lines 35-67 of James et al.) comprises at least one tip insert joined to the blade body. Regarding claim 105, the above presented prior art teaches the cross-sectional thickness of the tip insert is less than a wall thickness of the blade. Regarding claim 106, the above presented prior art teaches the cross-sectional thickness of the tip insert is equal to the wall thickness of the blade body. Regarding claim 107, the above presented prior art teaches the blade tip being a squealer (see Figure 1A and Col. 14, lines 6-32 of Arnold) (see Figure 1 and Col. 6, lines 8-47 of Ferrigno et al.) (see Figures 2, 4-5 and Col. 2, lines 30-68 of James et al.). Regarding claim 108, the above presented prior art teaches joining at least one tip insert to the blade by means of a process of either welding, brazing and diffusion bonding. Regarding claim 109, the above presented prior art discloses the tip insert including at least one internal cooling channel. Regarding claim 110, the above presented prior art discloses the tip insert including a

plurality of cooling holes. Regarding claim 111, the above presented prior art the tip insert including a superalloy based on a metal selected from the group consisting of iron, cobalt and nickel. Regarding claim 112, the above presented prior art discloses the tip insert including a directionally solidified material. Regarding claim 113, the above presented prior art teaches the tip insert including a single crystal material. Regarding claim 114, the above presented prior art teaches the blade having a first material and the tip insert having a second material. The above presented prior art discloses the second material having at least one material property exceeding the first material, wherein at least one material property consists of oxidation resistance, creep life and fatigue life. Regarding claim 115, the above presented prior art teaches the blade having a first material and the tip insert having a second. The above presented prior art discloses the second material having at least one material property exceeding the first material, wherein at least one material property consists of oxidation resistance, creep life and fatigue life. Regarding claim 116, the above presented prior art discloses the second material including a platinum group of metal modified nickel-based. Regarding claim 117, the above presented prior art discloses the superalloy being a metal selected from the group consisting of Pt, Pd, Rh, Ir, and Ru. Regarding claim 133, the above presented prior art teaches second material has a directionally solidified eutectic material. Regarding claim 134, the above presented prior art teaches the directionally solidified eutectic material being Ni, Ta, and C. Regarding claim 135, the above presented prior art teaches the second material having a fatigue life three time greater than the fatigue life of the first material. Regarding claim 136, the above presented prior art teaches the second material the

second material includes an oxide dispersion strengthened material. Regarding claim 137, the above presented prior art teaches the oxide dispersion strengthened material includes Ni, Cr and yttrium oxide. Regarding claim 138, the above presented prior art teaches the second material creep life three times greater than the first.

Regarding claim 139, the above presented prior art teaches a turbine blade ((18) see Figure 1A and Col. 23, lines 7-9 of Arnold) ((8) see Figure 1 and Col. 6, lines 8 of Ferrigno et al.) ((66) see Figure 5 and Col. 6, lines 28-30 of James et al.) body (see Figure 1A and Col. 14, lines 6-59 of Arnold) (see Figure 1 and Col. 6, lines 8-67 of Ferrigno et al.) (see Figures 2, 4-5 and Col. 2, lines 35-67 of James et al.) and tip (see Figure 1A and Col. 14, lines 6-59 of Arnold) (see Figure 1 and Col. 6, lines 8-67 of Ferrigno et al.) (see Figures 2, 4-5 and Col. 2, lines 35-67 of James et al.), wherein the tip includes a tip insert joined to the blade body material. The above presented prior art discloses the tip insert being of a material from at least one of a single crystal nickel-based superalloy, a NiTaC directionally solidified eutectic alloy, and an oxide dispersion strengthened alloy.

Regarding claim 140, the above presented prior art teaches a turbine blade ((18) see Figure 1A and Col. 23, lines 7-9 of Arnold) ((8) see Figure 1 and Col. 6, lines 8 of Ferrigno et al.) ((66) see Figure 5 and Col. 6, lines 28-30 of James et al.) body (see Figure 1A and Col. 14, lines 6-59 of Arnold) (see Figure 1 and Col. 6, lines 8-67 of Ferrigno et al.) (see Figures 2, 4-5 and Col. 2, lines 35-67 of James et al.) and tip (see Figure 1A and Col. 14, lines 6-59 of Arnold) (see Figure 1 and Col. 6, lines 8-67 of Ferrigno et al.) (see Figures 2, 4-5 and Col. 2, lines 35-67 of

James et al.), wherein the tip includes a tip insert joined to the blade body. The above presented prior art discloses the tip insert material selected from a material group consisting of rhodium, platinum, palladium, and mixtures thereof.

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 36, 72, 103 and 140 are rejected under 35 U.S.C. 102(b) as being anticipated by either Lee et al. (U.S. Patent number 6,461,108) or Rigney et al. (U.S. Patent Number 6,042,880). Lee et al. and Rigney et al. teach a second material including rhodium, platinum, palladium and mixtures thereof (see Figure 2 and Col. 2, lines 35-59 of Lee et al.) (see Figures 3, 5 and Col. 3, lines 35-53 of Rigney et al.). Lee et al. and Rigney et al. teach the repair and manufacture of a gas turbine blade (see Figure 2 and Col. 5, lines 5-31 of Lee et al.) (see Col. 2, line 35 of Rigney et al.) body and tip, wherein a portion of the blade tip is removed (see Figure 2 and Col. 2, lines 35-59 of Lee et al.) (see Figure 1 and Col. 2, lines 1-35 of Rigney et al.). Lee et al. and Rigney et al. teach a tip insert being made of a second material that is disposed on the blade body, wherein the insert replaces the removed portion of the blade (see Figure 2 and Col. 5, lines 5-31 of Lee et al.) (see Col. 2, line 35 of Rigney et al.). Regarding claim 36, the above presented prior art teaches method of manufacture of a gas turbine blade (see Figure 2 and Col.

5, lines 5-31 of Lee et al.) (see Col. 2, line 35 of Rigney et al.) wherein the blade includes a tip and body. The above presented prior art discloses removing a portion of the blade tip and providing a tip insert includes a material selected from the group consisting of rhodium, platinum, palladium and mixtures thereof (see Figure 2 and Col. 2, lines 35-59 of Lee et al.) (see Figures 3, 5 and Col. 3, lines 35-53 of Rigney et al.). The above presented prior art discloses the tip insert is placed on the blade body, wherein the tip insert replaces a one removed portion of the blade body. Regarding claim 72, Lee et al. and Rigney et al. teach a second material including rhodium, platinum, palladium and mixtures thereof (see Figure 2 and Col. 2, lines 35-59 of Lee et al.) (see Figures 3,5 and Col. 3, lines 35-54 and Col. 4, lines 44-67 of Rigney et al.). Lee et al. and Rigney et al. teach the repair and manufacture of a gas turbine blade body and tip, wherein a portion of the blade tip is removed. Lee et al. and Rigney et al. teach a tip insert being made of a second material that is disposed on the blade body, wherein the insert replaces the removed portion of the blade (see Figure 2 and Col. 2, lines 35-59 of Lee et al.) (see Col. 2, lines 1-35 of Rigney et al.). Regarding claim 103, Lee et al. and Rigney et al. teach a second material including rhodium, platinum, palladium and mixtures thereof. Lee et al. and Rigney et al. teach the repair and manufacture of a gas turbine blade body and tip, wherein a portion of the blade tip is removed (see Figure 2 and Col. 2, lines 35-59 of Lee et al.) (see Figure 1 and Col. 2, lines 1-35 of Rigney et al.). Lee et al. and Rigney et al. teach a tip insert being made of a second material that is disposed on the blade body, wherein the insert replaces the removed portion of the blade (see Figure 2 and Col. 2, lines 35-59 of Lee et al.) (see Figures 3,5 and Col. 3, lines 35-54 and Col. 4,

lines 44-67 of Rigney et al.). Regarding claim 140, Lee et al. and Rigney et al. teach a turbine blade body and tip, wherein the tip includes a tip insert joined to the blade body material. Lee et al. and Rigney et al. teach the tip insert material selected from a material group consisting of rhodium, platinum, palladium, and mixtures thereof (see Figure 2 and Col. 2, lines 35-59 of Lee et al.) (see Figures 3,5 and Col. 3, lines 35-54 and Col. 4, lines 44-67 of Rigney et al.).

Allowable Subject Matter

4. Claims 13-27, 29, 49-63, 79-101, 118-132 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Note, claim 13 has the novel features, since claims 14-27 and 29 depend on claim 13 they have been included. Note, claim 49 has the novel features, since claims 50-63 depend on claim 49 they have been included. Note, claim 79 has the novel features, since claims 80-101 depend on claim 79 they have been included. Note, claim 118 has the novel features, since claims 119-132 depend on claim 118 they have been included.

PRIOR ART

The prior art made of record but not relied upon is considered pertinent to applicant's disclosure and consists of 18 patents.

Jackson et al. (U.S. Patent Number 5,904,201), Ferrigno et al. (U.S. Patent Number 5,735,044), Hackel et al. (U.S. Patent Number 6,423,935), Dulaney et al. (U.S. Patent Number 6,238,187), Grylls et al. (U.S. Patent Number 6,468,040), Lee et al. (U.S. Patent Number 6,375,425), Sinnott et al. (U.S. Patent Number 6,332,272), and Maloney (U.S. Patent Number 6,299,971) are cited to show similar material features as claimed by Applicant's invention.

CONTACT INFORMATION

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner James M. McAleenan whose telephone number is (703) 308-2827. The examiner can normally be reached on Monday thru Friday from 9:00 am to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Look, can be reached at (703) 308-1044. The fax number for this Group is (703) 305-3588.

An inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0861.

J. M. McAleenan 5/14/03

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